

Claims

- [c1] 1. A method of forming an automotive hardware carrier in a two-shot molding operation for use in a door vehicle assembly, comprising:
molding a carrier body having a front and back surface by injecting a first curable material in a first shot of the molding operation;
forming a mold chamber about a portion of the front surface of the body;
and
molding a seal onto the front surface of the body by injecting a second curable material into the mold chamber in a second shot of the molding operation wherein the two shot molding operation is performed in a single mold assembly.
- [c2] 2. The method of claim 1, wherein the step of molding the seal further comprises molding the seal to include a non-linear configuration, the non-linear configuration being defined by opposing top and bottom surfaces of the seal and opposing first and second side walls of the seal, the first and second side walls connecting the top and bottom surfaces, the top surface provided for contacting a doorframe structure and the bottom surface bonded to the front surface of the carrier.
- [c3] 3. The method of claim 2, wherein the non-linear configuration includes at least one of a substantially repeating v-shaped, s-shaped, and o-shaped configuration.
- [c4] 4. The method of claim 2, wherein the non-linear configuration further comprises at least a first and second non-linear configuration, one side of

the seal including the first non-linear configuration and an opposing side of the seal including the second non-linear configuration.

- [c5] 5. The method of claim 1, wherein the second curable material is a thermoplastic elastomer and the first curable material is a thermoplastic material such that the second material bonds to the first material.
- [c6] 6. The method of claim 1, wherein the two shot molding operation is performed in a single mold assembly having at least one mold half provided with a retractable portion.
- [c7] 7. The method of claim 1, wherein the two shot molding operation is performed in a single mold assembly having at least one mold half that rotates about an axis.
- [c8] 8. A method of forming an automotive hardware carrier in a two-shot molding operation for use in a door vehicle assembly, comprising:
providing a mold assembly having a mold including a top and bottom portion, at least one of the portions adapted to rotate;
molding a carrier body having a front and back surface by injecting into the mold a first curable material in a first shot of the molding operation;
rotating the at least one of the portions to form a mold chamber about a portion of the front surface of the body; and
molding a seal onto the front surface of the body by injecting into the mold chamber a second curable material in a second shot of the molding operation.
- [c9] 9. The method of claim 8, wherein the step of molding the seal further

comprises molding the seal to include a non-linear configuration, the non-linear configuration being defined by opposing top and bottom surfaces of the seal and opposing first and second side walls of the seal, the first and second side walls connecting the top and bottom surfaces, the top surface provided for contacting a doorframe structure and the bottom surface bonded to the front surface of the carrier.

[c10] 10. The method of claim 9, wherein the non-linear configuration includes at least one of a substantially repeating v-shaped, s-shaped, and o-shaped configuration.

[c11] 11. The method of claim 9, wherein the non-linear configuration further comprises at least a first and second non-linear configuration, one side of the seal including the first non-linear configuration and an opposing side of the seal including the second non-linear configuration.

[c12] 12. The method of claim 8, wherein the second curable material is a thermoplastic elastomer and the first curable material is a thermoplastic material such that the second material bonds to the first material.

[c13] 13. The method of claim 8, wherein the step of providing a mold assembly further comprises the top portion being adapted to rotate about an axis, and wherein the step of rotating the at least one of the portions further comprises rotating the top portion so that top portion mates with the bottom portion to form the mold chamber about the portion of the front surface of the body.

[c14] 14. The method of claim 13, wherein the top portion further includes

opposing sides with one side including at least one first shot mold half and the other side including at least one second shot mold half, and the bottom portion includes at least one mold half adapted to mate with the at least one first and second shot mold halves, wherein the step of molding the body further comprises mating the at least one first shot mold half of the top portion with the at least one mold half of the bottom portion to define a first mold and injecting into the first mold the first material, and wherein the step of rotating the top portion further comprises rotating the top portion so that the at least one second shot mold half mates with the at least one mold half of the bottom portion to form the mold chamber about the portion of the front surface of the body.

- [c15] 15. The method of claim 14, wherein the at least one first and second shot mold halves comprise two first and second shot mold halves and the at least one mold half includes two mold halves, each of the two first and second shot mold halves adapted to mate with a corresponding one of the two mold halves of the bottom portion for molding, in sequence, the body then the seal in the two-shot molding operation, wherein the step of molding the body further comprises mating each of the two first shot mold halves of the top portion with the corresponding one of the two mold halves of the bottom portion to define first molds and injecting into the first molds the first material, and wherein the step of rotating the top portion further comprises rotating the top portion so that each of the two second shot mold halves mate with the corresponding one of the two mold halves of the bottom portion to form the mold chamber about the portion of the front surface of the body.

- [c16] 16. A door trim panel assembly for mounting to a doorframe structure of a motor vehicle, comprising:
- a hardware carrier having a front and back surface; and
- a seal molded to the front surface and having a non-linear configuration, the non-linear configuration being defined by opposing top and bottom surfaces of the seal and opposing first and second side walls of the seal, the first and second side walls connecting the top and bottom surfaces, the bottom surface being molded to the front surface of the carrier and the top surface for contacting the doorframe structure to seal the carrier thereto.
- [c17] 17. The door trim panel assembly of claim 16 further comprising a door trim panel, the back surface of the hardware carrier being coupled to the door trim panel.
- [c18] 18. The door trim panel assembly of claim 16 wherein the non-linear configuration includes at least one of a substantially repeating v-shaped, s-shaped, and o-shaped configuration.
- [c19] 19. The door trim panel assembly of claim 16 wherein the non-linear configuration further comprises at least a first and second non-linear configuration, one side of the seal including the first non-linear configuration and an opposing side of the seal including the second non-linear configuration.
- [c20] 20. The door trim panel assembly of claim 16 wherein the seal comprises a thermoplastic elastomer and the body comprises a thermoplastic material such that the seal bonds to the body.